IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Sen, et al.
Serial No.: 10/757,021
Confirmation No.: 3282
Filed: January 14, 2004
For: Process Kit Design for Deposition Chamber

Group Art Unit: 1763
Examiner: Jeffrie R. Lund

MAIL STOP APPEAL BRIEF-PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Mail Stop APPEAL BRIEF-PATENTS, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, or electronically transmitted to the U.S. Patent and Trademark Office via EFS-Web to the attention of Examiner Jeffrie R. Lund, on the date shown below.

1/8/07
Date

Steven H. VerSteeg

Dear Sir:

APPEAL BRIEF

Appellant submits this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 1763 dated August 9, 2006, finally rejecting claims 1-5 and 8-22. The final rejection of claims 1-5 and 8-22 is appealed. This Appeal Brief is believed to be timely since filed by the due date of January 8, 2007, as set by mailing a Notice of Appeal on November 8, 2007. Authorization to charge the fee of $500.00 for filing this brief is provided on a separate fee transmittal. Please charge any additional fees that may be required to make this Appeal Brief timely and acceptable to Deposit Account No. 20-0782/APPM/008758/KMT.

Table of Contents

Real Party in Interest

The present application has been assigned to Applied Materials, Inc., 3050 Bowers Avenue, Santa Clara, California 95054.

Related Appeals and Interferences

Appellant asserts that no other appeals or interferences are known to the Appellant, the Appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1-5 and 8-22 are pending in the application. Claims 1-15 were originally presented in the application. Claims 1, 5, 9, 13 were amended in a preliminary amendment filed December 30, 2004. Claims 1, 5, 9, 12, 13, and 15 were amended in Appellant's Response to Office Action dated May 24, 2006. Claims 16-22 were added in Appellant's Response to Office Action dated May 24, 2006. Claims 6 and 7 have been canceled without prejudice. Claims 1-5 and 8-22 stand finally rejected as discussed below. The final rejection of claims 1-5 and 8-22 is appealed. The pending claims are shown in the attached Claims Appendix.

Status of Amendments

All claim amendments have been entered by the Examiner. No amendments to the claims were proposed after the final rejection. A response to the Final Office Action was filed September 27, 2006 without amending the claims. The Examiner indicated in the Advisory Action dated October 12, 2006 that the response filed September 27, 2006 would not be entered for purposes of appeal.

Summary of Claimed Subject Matter

Claimed embodiments of the invention provide a process kit for a vacuum processing chamber (item 40, paragraph [0041]).

In the embodiments of independent claim 1, a process kit for a vacuum processing chamber is disclosed. The vacuum processing chamber comprises a chamber body defining an interior processing region (item 40, Figures 4 and 7, paragraph [0041]). The process kit comprises a pumping liner (item 410, Figure 5, paragraph [0046]) configured to be placed within the processing region (item 404) of the processing chamber, the pumping liner comprising a circumferential body having an upper surface and a lower surface, wherein the body has a plurality of pumping holes (item 412, Figure 5, paragraph [0046]) disposed along the body, a C-channel liner configured to be placed along an outer diameter of the pumping liner (item 420, Figure 5, paragraph [0049]), a middle liner configured to reside below the pumping liner and the C-channel liner (item 427, Figure 5, paragraph [0039]), and a lower liner configured to reside below the middle liner (item 450, Figure 5, paragraph [0039]). The C-channel liner comprises a circumferential body portion having an upper surface and lower surface (Figure 6A, paragraph [0050]), a circumferential upper arm disposed proximate the upper surface of the body portion of the C-channel liner (item 421, Figure 6A, paragraph [0050]), a lower arm disposed around a selected radial portion of the body portion of the C-channel liner, the lower arm disposed along the bottom surface of the body portion of the C-channel liner (item 423, Figure 6B, paragraph [0050]), and a channel portion in the C-channel liner defined between the body portion of the C-channel liner, the upper arm, the lower arm, and an outer diameter of the pumping liner, wherein the C-channel liner has a pumping port liner opening (Figure 6B, paragraph [0050]). An upper interlocking feature is formed between the upper surface of the pumping liner and the upper arm of the C-channel liner, a lower interlocking feature is formed between the lower surface of the pumping liner and the lower arm of the C-channel liner, and the upper and lower interlocking features inhibit parasitic pumping within the processing region (Figure 5, paragraph [0051]).

In the embodiments of independent claim 5, a process kit for a vacuum processing chamber is disclosed. The vacuum processing chamber comprises a chamber body defining an interior processing region (item 40, Figures 4 and 7, paragraph [0041]). The process kit comprises a pumping liner (item 410, Figure 5, paragraph [0046]) configured to be placed within the processing region (item 404) of the processing chamber, a C-channel liner configured to be placed along an outer diameter of the pumping liner body within the processing region of the processing chamber (item 420, Figure 5, paragraph [0049]), a middle liner configured to reside below the pumping liner and the C-channel liner (item 427, Figure 5, paragraph [0039]), and a lower liner configured to reside below the middle liner (item 450, Figure 5, paragraph [0039]). The pumping liner comprises a circumferential body (item 410', Figure 6A, paragraph [0048]), wherein the circumferential body has a plurality of pumping holes disposed along the circumferential body (item 412, Figure 5, paragraph [0046]), a shoulder circumferentially placed along an upper surface of the pumping liner body (item 414, Figure 6A, paragraph [0048]), and a lower lip disposed along a radial portion of a lower surface of the pumping liner body (item 416, Figure 6B, paragraph [0048]). The C-channel liner comprises a circumferential body (Figure 6A, paragraph [0050]), an upper arm (item 421, Figure 6A, paragraph [0050]), a lower arm (item 423, Figure 6B, paragraph [0050]), a channel portion defined by the upper arm, the lower arm, the body of the C-channel liner, and the body of the pumping liner (Figure 6B, paragraph [0050]), an upper lip circumferentially disposed along the upper arm (item 424, Figure 6B, paragraph [0050]), the upper lip of the C-channel liner configured to interlock with the shoulder of the pumping liner body, and a lower shoulder along a radial portion of the lower arm, the lower shoulder of the C-channel liner configured to interlock with the lower lip of the pumping liner and to also provide a pumping port liner opening (Figure 5, paragraph [0051]).

In the embodiments of independent claim 9, a vacuum processing chamber for processing a substrate comprising a chamber body defining an interior processing region, and a process kit disposed within the processing chamber is disclosed (item 40, Figures 4 and 7, paragraphs [0041] and [0046]). The process kit comprises a pumping liner (item 410, Figure 5, paragraph [0046]) configured to be placed within the

processing region (item 404) of the processing chamber, a C-channel liner configured to be placed along an outer diameter of the pumping liner body within the processing region of the processing chamber (item 420, Figure 5, paragraph [0049]), a middle liner configured to reside below the pumping liner and the C-channel liner (item 427, Figure 5, paragraph [0039]), and a lower liner configured to reside below the middle liner (item 450, Figure 5, paragraph [0039]). The pumping liner comprises a circumferential body, (item 410', Figure 6A, paragraph [0048]), wherein the circumferential body has a plurality of pumping holes disposed along the circumferential body (item 412, Figure 5, paragraph [0046]), a shoulder circumferentially placed along an upper surface of the pumping liner body (item 414, Figure 6A, paragraph [0048]), and a lower lip disposed along a radial portion of a lower surface of the pumping liner body (item 416, Figure 6B, paragraph [0048]). The C-channel liner comprises a circumferential body (Figure 6A, paragraph [0050]), an upper arm (item 421, Figure 6A, paragraph [0050]), a lower arm (item 423, Figure 6B, paragraph [0050]), a channel portion defined by the upper arm, the lower arm, the body of the C-channel liner, and the body of the pumping liner (Figure 6B, paragraph [0050]), an upper lip circumferentially disposed along the upper arm (item 424, Figure 6B, paragraph [0050]), the upper lip of the C-channel liner configured to interlock with the shoulder of the pumping liner body, and a lower shoulder along a radial portion of the lower arm, the lower shoulder of the C-channel liner configured to interlock with the lower lip of the pumping liner and to also provide a pumping port liner opening (Figure 5, paragraph [0051]).

In the embodiments of independent claim 13, a tandem vacuum processing chamber for processing a substrate is disclosed (Figure 2, paragraph [0029]). The tandem vacuum processing chamber comprises a chamber body (item 200, Figure 2, paragraph [0029]) having a pair of interior processing regions provided within the chamber body, the interior processing regions being in fluid communication with one another (items 218, 220, Figure 2, paragraph 0030)), and a process kit disposed within each of the interior processing regions (item 40, Figures 4 and 7, paragraphs [0041] and [0046]). Each process kit comprises a pumping liner (item 410, Figure 5, paragraph [0046]) configured to be placed within the processing region (item 404) of the processing chamber, a C-channel liner configured to be placed along an outer diameter

of the pumping liner body within the processing region of the processing chamber (item 420, Figure 5, paragraph [0049]), a middle liner configured to reside below the pumping liner and the C-channel liner (item 427, Figure 5, paragraph [0039]), and a lower liner configured to reside below the middle liner (item 450, Figure 5, paragraph [0039]). The pumping liner comprises a circumferential body, (item 410', Figure 6A, paragraph [0048]), wherein the circumferential body has a plurality of pumping holes disposed along the circumferential body (item 412, Figure 5, paragraph [0046]), a shoulder circumferentially placed along an upper surface of the pumping liner body (item 414, Figure 6A, paragraph [0048]), and a lower lip disposed along a radial portion of a lower surface of the pumping liner body (item 416, Figure 6B, paragraph [0048]). The C-channel liner comprises a circumferential body (Figure 6A, paragraph [0050]), an upper arm (item 421, Figure 6A, paragraph [0050]), a lower arm (item 423, Figure 6B, paragraph [0050]), a channel portion defined by the upper arm, the lower arm, the body of the C-channel liner, and the body of the pumping liner (Figure 6B, paragraph [0050]), an upper lip circumferentially disposed along the upper arm (item 424, Figure 6B, paragraph [0050]), the upper lip of the C-channel liner configured to interlock with the shoulder of the pumping liner body, and a lower shoulder along a radial portion of the lower arm, the lower shoulder of the C-channel liner configured to interlock with the lower lip of the pumping liner and to also provide a pumping port liner opening (Figure 5, paragraph [0051]). The tandem vacuum processing chamber also comprises a pair of upper pumping port liners, each upper pumping port liner being in fluid communication with a respective pumping port liner opening (item 410, Figure 5, paragraph [0039]).

Grounds of Rejection to be Reviewed on Appeal

1. Whether claims 1-5, 8-10, and 16-18 are unpatentable under 35 U.S.C. § 103(a) over US Patent 6,527,865 B1 to *Sajoto et al.* in view of WO 01/46498 A3 to *Frijlink.*

2. Whether claims 11, 12, 20, and 21 are unpatentable under 35 U.S.C. § 103(a) over US Patent 6,527,865 B1 to *Sajoto et al.* in view of WO 01/46498 A3 to *Frijlink* as applied to claims 1-5 and 8-10 above, and further in view of US Patent 6,666,920 B1 to *Sillmon et al.*

3. Whether claims 13-15 and 19 are unpatentable under 35 U.S.C. § 103(a) over US Patent 6,527,865 B1 to *Sajoto et al.* in view of WO 01/46498 A3 to *Frijlink* as applied to claims 1-5 and 8-10 above, and further in view US Patent 5,911,834 to *Fairbairn et al.*

4. Whether claim 22 is unpatentable under 35 U.S.C. § 103(a) over US Patent 6,527,865 B1 to *Sajoto et al.* in view of WO 01/46498 A3 to *Frijlink* and US Patent 5,911,834 to *Fairbairn et al.* as applied to claims 1-5, 8-10, 13-15, and 19 above and further in view of US Patent 6,666,920 B1 to *Sillmon et al.*

Arguments

A. Claims 1-5, 8-10, and 16-18 are not obvious over *Sajoto et al.* in view of *Frijlink*

Claims 1-5, 8-10, and 16-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over US Patent 6,527,865 B1 to *Sajoto et al.* in view of WO 01/46498 A3 to *Frijlink*. Appellant respectfully traverses the rejection.

The Examiner has proposed placing a process kit from *Frijlink* into the apparatus of *Sajoto et al.* stating that the motivation is to "completely line the C-shaped pumping channel of Sajoto et al to prevent deposition of bi-products on exposed surfaces of the gas manifold 46 or support ring 78 of Sajoto et al; simplify the construction of the middle shield ring and thus reduce the cost of the apparatus; and improve the uniformity of the gas flow in the processing chamber by equalizing the pressure gradient by replacing the open pumping slot of Sajoto et al with the pumping liner with holes 12 of Frijlink" (Final Office Action mailed August 9, 2006, page 4). Appellant respectfully disagrees and believes that changing the liner of *Sajoto et al.* with a process kit of *Frijlink* would only be permissible with hindsight.

In contradiction to the Examiner's suggested motivation, *Sajoto et al.* already effectively lines the chamber with a liner 28. The liner 28 covers upper chamber surfaces (col. 8, l. 51-52). Changing the liner 28 to a process kit as suggested by the Examiner is mere speculation based upon hindsight. There is no indication of any problem of the liner 28 in *Sajoto et al.* necessitating a change in the liner. Additionally, there is no suggestion in *Frijlink* to use the process kit in *Sajoto et al.* to provide any additional benefit. The process kit of *Frijlink* has an annular top part 15 that forms a portion of a gas-collector (col. 5, l. 16-19). There is no indication that the top part 15 is used to shield any portions of the apparatus of *Frijlink*. As may be seen from Figure 3 of *Frijlink*, the process kit does not shield anything because significant portions of the chamber remain uncovered (*i.e.*, items 10, 20, 21, and 19C) by the process kit. Thus, taking a gas collector or a portion thereof and placing it into another apparatus for the

purpose of preventing "deposition of bi-products on exposed surfaces of the gas manifold 46 or support ring 78" may only be accomplished with hindsight reasoning.

Removing a portion of the liner 28 of *Sajoto et al.* and replacing it with a process kit from *Frijlink* does not "simplify the construction of the middle shield ring and thus reduce the cost of the apparatus" as the Examiner has stated. Making a single liner 28 into multiple pieces (*i.e.*, a portion of liner 28 and the process kit of *Frijlink*) creates a much more complicated design as multiple pieces would be necessary to perform the function obtained by a single liner 28. Reducing cost, as the Examiner has stated, is mere speculation without any evidential support.

Similarly, adding a process kit from *Frijlink* to the liner 28 of *Sajoto et al.* also does not "simplify the construction of the middle shield ring and thus reduce the cost of the apparatus" as the Examiner has stated. Adding a process kit to an apparatus that already contains a liner 28 creates a much more complicated design as multiple pieces would be necessary to perform the function obtained by a single liner 28. Reducing cost, as the Examiner has stated, is mere speculation without any evidential support.

The process kit of *Frijlink* would not equalize the pressure gradient of *Sajoto et al.* There is no indication that a pressure gradient problem exists in *Sajoto et al.* The liner 28 in *Sajoto et al.* within the apparatus creates a "generally U-shaped passage surrounding the gas distribution assembly" that "forms a pumping channel through which gases are drawn into the exhaust system" (col. 5, l. 4-6). Adding the process kit of *Frijlink* to the apparatus of *Sajoto et al.* would likely disrupt the pumping of gases into the exhaust system because the process kit, as suggested by the Examiner, would need to be placed within the U-shaped passage of *Sajoto et al.* and thus clog the pumping channel.

Therefore, *Sajoto et al.* in view of *Frijlink*, alone or in combination, do not teach, show, or suggest a process kit for a vacuum processing chamber, wherein the vacuum processing chamber comprises a chamber body defining an interior processing region and wherein the process kit comprises a pumping liner configured to be placed within the processing region of the processing chamber; the pumping liner comprising a circumferential body having an upper surface and a lower surface, wherein the body has a plurality of pumping holes disposed along the body, a C-channel liner configured

to be placed along an outer diameter of the pumping liner, a middle liner configured to reside below the pumping liner and the C-channel liner, and a lower liner configured to reside below the middle liner; and wherein the C-channel liner comprises a circumferential body portion having an upper surface and lower surface, a circumferential upper arm disposed proximate the upper surface of the body portion of the C-channel liner, a lower arm disposed around a selected radial portion of the body portion of the C-channel liner, the lower arm disposed along the bottom surface of the body portion of the C-channel liner, and a channel portion in the C-channel liner defined between the body portion of the C-channel liner, the upper arm, the lower arm, and an outer diameter of the pumping liner, wherein the C-channel liner has a pumping port liner opening, wherein an upper interlocking feature is formed between the upper surface of the pumping liner and the upper arm of the C-channel liner, a lower interlocking feature is formed between the lower surface of the pumping liner and the lower arm of the C-channel liner, and the upper and lower interlocking features inhibit parasitic pumping within the processing region, as recited in independent claim 1 and claims dependent thereon.

Sajoto et al. in view of *Frijlink*, alone or in combination, do not teach, show, or suggest a process kit for a vacuum processing chamber, wherein the vacuum processing chamber comprises a chamber body defining an interior processing region and the process kit comprises a pumping liner configured to be placed within the processing region of the processing chamber, a C-channel liner configured to be placed along an outer diameter of the pumping liner body within the processing region of the processing chamber, a middle liner configured to reside below the pumping liner and the C-channel liner, and a lower liner configured to reside below the middle liner; wherein the pumping liner comprises a circumferential body, wherein the circumferential body has a plurality of pumping holes disposed along the circumferential body, a shoulder circumferentially placed along an upper surface of the pumping liner body, and a lower lip disposed along a radial portion of a lower surface of the pumping liner body; and wherein the C-channel liner comprises a circumferential body, an upper arm, a lower arm, a channel portion defined by the upper arm, the lower arm, the body of the C-channel liner, and the body of the pumping liner, an upper lip circumferentially

disposed along the upper arm, the upper lip of the C-channel liner configured to interlock with the shoulder of the pumping liner body, and a lower shoulder along a radial portion of the lower arm, the lower shoulder of the C-channel liner configured to interlock with the lower lip of the pumping liner and to also provide a pumping port liner opening, as claimed in claim 5 and claims dependent thereon.

Sajoto et al. in view of *Frijlink*, alone or in combination, do not teach, show, or suggest a vacuum processing chamber for processing a substrate comprising a chamber body defining an interior processing region, and a process kit disposed within the processing chamber; wherein the process kit comprises a pumping liner configured to be placed within the processing region of the processing chamber, a C-channel liner configured to be placed along an outer diameter of the pumping liner body within the processing region of the processing chamber, a middle liner configured to reside below the pumping liner and the C-channel liner, and a lower liner configured to reside below the middle liner; wherein the pumping liner comprises a circumferential body, wherein the circumferential body has a plurality of pumping holes disposed along the circumferential body, a shoulder circumferentially placed along an upper surface of the pumping liner body, and a lower lip disposed along a radial portion of a lower surface of the pumping liner body; and wherein the C-channel liner comprises a circumferential body, an upper arm, a lower arm, a channel portion defined by the upper arm, the lower arm, the body of the C-channel liner, and the body of the pumping liner, an upper lip circumferentially disposed along the upper arm, the upper lip of the C-channel liner configured to interlock with the shoulder of the pumping liner body, and a lower shoulder along a radial portion of the lower arm, the lower shoulder of the C-channel liner configured to interlock with the lower lip of the pumping liner and to also provide a pumping port liner opening, as recited in claim 9 and claims dependent thereon.

B. Claims 11, 12, 20, and 21 are not obvious over *Sajoto et al.* in view of *Frijlink* and *Sillmon et al.*

Claims 11, 12, 20, and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over US Patent 6,527,865 B1 to *Sajoto et al.* in view of WO 01/46498 A3

to *Frijlink* as applied to claims 1-5 and 8-10 above, and further in view of US Patent 6,666,920 B1 to *Sillmon et al.* Appellant respectfully traverses the rejection.

Sillmon et al. does not cure the deficiencies of *Sajoto et al.* and *Frijlink* discussed above. Therefore, Appellant respectfully requests that the rejection of claims 11, 12, 20, and 20 be withdrawn for at least the reasons discussed above in relation to claims 1, 5, and 9, which are believed to be allowable.

C. Claims 13-15 and 19 are not obvious over *Sajoto et al.* in view of *Frijlink* and *Fairbairn et al.*

Claims 13-15 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over US Patent 6,527,865 B1 to *Sajoto et al.* in view of WO 01/46498 A3 to *Frijlink* as applied to claims 1-5 and 8-10 above, and further in view US Patent 5,911,834 to *Fairbairn et al.* Appellant respectfully traverses the rejection.

The Examiner has stated that adding an additional processing region as taught by *Fairbairn et al.* would be obvious to increase the throughput of *Sajoto et al.* and *Frijlink*, but the teaching of *Fairbairn et al.* does not cure the deficiencies of Sajoto et al. and *Frijlink*. *Fairbairn et al.* provides no additional benefits or reasoning to place the process kit of *Frijlink* into the apparatus of *Sajoto et al.*

Therefore, *Sajoto et al.*, *Frijlink*, and *Fairbairn et al.*, alone or in combination, do not teach, show, or suggest a tandem vacuum processing chamber for processing a substrate wherein the tandem vacuum processing chamber comprises a chamber body having a pair of interior processing regions provided within the chamber body, the interior processing regions being in fluid communication with one another, and a process kit disposed within each of the interior processing regions; wherein each process kit comprises a pumping liner configured to be placed within the processing region of the processing chamber, a C-channel liner configured to be placed along an outer diameter of the pumping liner body within the processing region of the processing chamber, a middle liner configured to reside below the pumping liner and the C-channel liner, and a lower liner configured to reside below the middle liner; wherein the pumping liner comprises a circumferential body, wherein the circumferential body has a plurality

of pumping holes disposed along the circumferential body, a shoulder circumferentially placed along an upper surface of the pumping liner body, and a lower lip disposed along a radial portion of a lower surface of the pumping liner body; wherein the C-channel liner comprises a circumferential body, an upper arm, a lower arm, a channel portion defined by the upper arm, the lower arm, the body of the C-channel liner, and the body of the pumping liner, an upper lip circumferentially disposed along the upper arm, the upper lip of the C-channel liner configured to interlock with the shoulder of the pumping liner body, and a lower shoulder along a radial portion of the lower arm, the lower shoulder of the C-channel liner configured to interlock with the lower lip of the pumping liner and to also provide a pumping port liner opening; and wherein the tandem vacuum processing chamber also comprises a pair of upper pumping port liners, each upper pumping port liner being in fluid communication with a respective pumping port liner opening, as claimed in claim 13 and claims dependent thereon.

D. Claim 22 is not obvious over *Sajoto et al.* in view of *Frijlink*, *Fairbairn et al.*, and *Sillmon et al.*

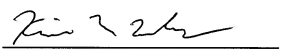
Claim 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over US Patent 6,527,865 B1 to *Sajoto et al.* in view of WO 01/46498 A3 to *Frijlink* and US Patent 5,911,834 to *Fairbairn et al.* as applied to claims 1-5, 8-10, 13-15, and 19 above and further in view of US Patent 6,666,920 B1 to *Sillmon et al.* Appellant respectfully traverses the rejection.

Sillmon et al. does not cure the deficiencies of *Sajoto et al.*, *Frijlink*, and *Fairbairn et al.* discussed above. Therefore, Appellant respectfully requests that the rejection of claim 22 be withdrawn for at least the reasons discussed above in relation to claim 13, which is believed to be allowable.

Conclusion

The Examiner errs in finding that *Sajoto et al.* in view of *Frijlink* render claims 1-5, 8-10, and 16-18 obvious. The Examiner also errs in finding that *Sajoto et al.* in view of *Frijlink* and *Sillmon et al.* renders claims 11, 12, 20, and 21 obvious. The Examiner further errs in finding that *Sajoto et al.* in view of *Frijlink* and *Fairbairn et al.* renders claims 13-15 and 19 obvious. The Examiner additionally errs in finding that *Sajoto et al.* in view of *Frijlink*, Fairbairn *et al.*, and *Sillmon et al.* renders claim 22 obvious. It is respectfully requested that the Board reverse the findings of the Examiner.

Respectfully submitted,



Keith M. Tackett
Registration No. 32,008
Patterson & Sheridan, L.L.P.
3040 Post Oak Blvd. Suite 1500
Houston, TX 77056
Telephone: (713) 623-4844
Facsimile: (713) 623-4846
Attorney for Appellant

Claims Appendix

1. (Previously Presented) A process kit for a vacuum processing chamber, the vacuum processing chamber comprising a chamber body defining an interior processing region, the process kit comprising:

a pumping liner configured to be placed within the processing region of the processing chamber, the pumping liner comprising a circumferential body having an upper surface and a lower surface, wherein the body has a plurality of pumping holes disposed along the body;

a C-channel liner configured to be placed along an outer diameter of the pumping liner, the C-channel liner comprising:

a circumferential body portion having an upper surface and lower surface,

a circumferential upper arm disposed proximate the upper surface of the body portion of the C-channel liner,

a lower arm disposed around a selected radial portion of the body portion of the C-channel liner, the lower arm disposed along the bottom surface of the body portion of the C-channel liner, and

a channel portion in the C-channel liner defined between the body portion of the C-channel liner, the upper arm, the lower arm, and an outer diameter of the pumping liner, wherein the C-channel liner has a pumping port liner opening;

a middle liner configured to reside below the pumping liner and the C-channel liner; and

a lower liner configured to reside below the middle liner;

wherein an upper interlocking feature is formed between the upper surface of the pumping liner and the upper arm of the C-channel liner;

wherein a lower interlocking feature is formed between the lower surface of the pumping liner and the lower arm of the C-channel liner; and

wherein the upper and lower interlocking features inhibit parasitic pumping within the processing region.

2. (Original) The process kit of claim 1, wherein the pumping liner is configured to rest on the C-channel liner.

3. (Original) The process kit of claim 1, wherein the upper interlocking feature comprises:

a shoulder circumferentially placed along the upper surface of the pumping liner body; and

an upper lip circumferentially disposed along the upper arm, the upper lip of the C-channel liner configured to interlock with the shoulder of the pumping liner body.

4. (Original) The process kit of claim 1, wherein the lower interlocking feature comprises:

a lower lip disposed along a radial portion of the lower surface of the pumping liner body; and

a lower shoulder along a radial portion of the lower arm, the lower shoulder of the C-channel liner configured to interlock with the lower lip of the pumping liner.

5. (Previously Presented) A process kit for a vacuum processing chamber, the vacuum processing chamber comprising a chamber body defining an interior processing region, the process kit comprising:

a pumping liner configured to be placed within the processing region of the processing chamber, the pumping liner comprising:

a circumferential body, wherein the circumferential body has a plurality of pumping holes disposed along the circumferential body,

a shoulder circumferentially placed along an upper surface of the pumping liner body, and

a lower lip disposed along a radial portion of a lower surface of the pumping liner body;

a C-channel liner configured to be placed along an outer diameter of the pumping liner body within the processing region of the processing chamber, the C-channel liner comprising:

a circumferential body,

an upper arm,

a lower arm,

a channel portion defined by the upper arm, the lower arm, the body of the C-channel liner, and the body of the pumping liner,

an upper lip circumferentially disposed along the upper arm, the upper lip of the C-channel liner configured to interlock with the shoulder of the pumping liner body, and

a lower shoulder along a radial portion of the lower arm, the lower shoulder of the C-channel liner configured to interlock with the lower lip of the pumping liner and to also provide a pumping port liner opening;

a middle liner configured to reside below the pumping liner and the C-channel liner; and

a lower liner configured to reside below the middle liner.

6-7. (Canceled)

8. (Original) The vacuum processing chamber of claim 5, wherein the vacuum processing chamber further comprises a pumping port liner in fluid communication with the pumping port liner opening of the C-channel liner.

9. (Previously Presented) A vacuum processing chamber for processing a substrate, the vacuum processing chamber comprising a chamber body defining an interior processing region, and a process kit disposed within the processing chamber, the process kit comprising:

a pumping liner configured to be placed within the processing region of the processing chamber, the pumping liner comprising:

a circumferential body, wherein the circumferential body has a plurality of pumping holes disposed along the circumferential body,

a shoulder circumferentially placed along an upper surface of the pumping liner body, and

a lower lip disposed along a radial portion of a lower surface of the pumping liner body;

a C-channel liner configured to be placed along an outer diameter of the pumping liner body within the processing region of the processing chamber, the C-channel liner comprising:

a circumferential body,

an upper arm,

a lower arm,

a channel portion defined by the upper arm, the lower arm, the body of the C-channel liner, and the body of the pumping liner,

an upper lip circumferentially disposed along the upper arm, the upper lip of the C-channel liner configured to interlock with the shoulder of the pumping liner, and

a lower shoulder along a radial portion of the lower arm, the lower shoulder of the C-channel liner configured to interlock with the lower lip of the pumping liner and to also provide a pumping port liner opening;

a middle liner configured to reside below the pumping liner and the C-channel liner; and

a lower liner configured to reside below the middle liner.

10. (Original) The vacuum processing chamber of claim 9, further comprising:

a pumping port liner in fluid communication with the pumping port liner opening of the C-channel liner.

11. (Original) The vacuum processing chamber of claim 10, further comprising:

a seal member providing a seal between

an interface of the C-channel liner with the pumping port liner, and

an interface of the pumping liner with the pumping port liner.

12. (Previously Presented) The vacuum processing chamber of claim 11, wherein the seal member has at least an outer surface fabricated from a material selected from the group consisting of a polished aluminum, a polymer coating, ceramics, and quartz.

13. (Previously Presented) A tandem vacuum processing chamber for processing a substrate, the tandem vacuum processing chamber comprising:

a chamber body having a pair of interior processing regions provided within the chamber body, the interior processing regions being in fluid communication with one another; and

a process kit disposed within each of the interior processing regions, each process kit comprising:

a pumping liner configured to be placed within the respective processing region, the pumping liner comprising:

a circumferential body, wherein the circumferential body has a plurality of pumping holes disposed along the circumferential body,

a shoulder circumferentially placed along an upper surface of the pumping liner body, and

a lower lip disposed along a radial portion of a lower surface of the pumping liner body;

a C-channel liner configured to be placed along an outer diameter of the pumping liner body within the processing region, the C-channel liner comprising:

a circumferential body,

an upper arm,

a lower arm,

a channel portion defined by the upper arm, the lower arm, the body of the C-channel liner, and the body of the pumping liner,

an upper lip circumferentially disposed along the upper arm, the upper lip of the C-channel liner configured to interlock with the shoulder of the pumping liner, and

a lower shoulder along a radial portion of the lower arm, the lower shoulder of the C-channel liner configured to interlock with the lower lip of the pumping liner and to also provide a pumping port liner opening;

a middle liner configured to reside below the pumping liner and the C-channel liner; and

a lower liner configured to reside below the middle liner;

a pair of upper pumping port liners, each upper pumping port liner being in fluid communication with a respective pumping port liner opening.

14. (Original) The tandem vacuum processing chamber of claim 13, wherein the interior processing regions are maintained in fluid communication with one another through a pressure equalization port liner.

15. (Previously Presented) The tandem vacuum processing chamber of claim 14, wherein at least an outer surface of the pressure equalization port liner is fabricated from a smooth material selected from the group consisting of a polished aluminum, a polymer coating, ceramics, and quartz.

16. (Previously Presented) The process kit of claim 1, further comprising a gas distribution plate.

17. (Previously Presented) The process kit of claim 5, further comprising a gas distribution plate.

18. (Previously Presented) The vacuum processing chamber of claim 9, further comprising a gas distribution plate.

19. (Previously Presented) The tandem vacuum processing chamber of claim 13, further comprising a gas distribution plate.

20. (Previously Presented) The process kit of claim 1, further comprising:

a seal member providing a seal between an interface of the C-channel liner with the pumping port liner.

21. (Previously Presented) The process kit of claim 5, further comprising:

a seal member providing a seal between an interface of the C-channel liner with the pumping port liner.

22. (Previously Presented) The tandem vacuum processing chamber of claim 13, further comprising:

a seal member providing a seal between an interface of the C-channel liner with the pumping port liner.

Evidence Appendix

NONE

Related Proceedings Appendix

No copies of decisions rendered by a court or the Board in the related appeal or interference listed on page 4 of this Brief are included as there have been no decisions by the court or the Board in the related appeal or interference listed on page 4 of this Brief.